

1. A fusion molecule comprising HDAG and at least one binding moiety.
2. The fusion molecule of Claim 1 wherein the binding moiety is selected from the group consisting of an antigen, an antibody, a single chain antibody, a ligand, a receptor, an enzyme, a ligand interaction peptide, a chemical, an effector, an oligonucleotide, a signal amplification peptide, an enhancer recognition protein, a promoter binding protein, a label, a growth factor, a cytokine, a nuclease, a small organic molecule, a test substance, a cytotoxic agent, a substrate, a solid substrate, a drug or a fragment thereof.
3. The fusion molecule of Claim 1 which comprises two binding moieties which are binding partners.
4. The fusion molecule of Claim 1 which is a fusion protein.
5. The fusion molecule of Claim 1 wherein the HDAG and the binding moiety are chemically linked.
6. The fusion molecule of Claim 1 wherein the HDAG and the binding moiety are expressed as a single unit.
7. A coiled-coil oligomer comprising at least two fusion molecules of Claim 1.
8. The coiled-coil oligomer of Claim 7 which is an octamer.

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9. The coiled-coil oligomer of Claim 7 wherein two fusion molecules are the same.
10. The coiled-coil oligomer of Claim 7 wherein two fusion molecules are different.
11. An isolated nucleic acid molecule comprising a nucleotide sequence selected from the group consisting of:
- a) a nucleotide sequence depicted in Figure 9, nucleotides 37 - 150 of Figure 9, nucleotides 37 - 186 of Figure 9, Figure 10, nucleotides 1421 - 1566 of Figure 10, nucleotides 1457 - 1566 of Figure 10, Figure 15 and Figure 16;
 - b) a complementary strand of the sequence of a);
 - c) DNA sequences that hybridize to the sequence of a) or b); and
 - d) RNA sequences transcribed from the sequences of a), b) or c), or a fragment or mutation thereof, which encodes a coiled-coil oligomer.
12. An isolated nucleic acid molecule comprising a nucleotide sequence selected from the group consisting of:
- a) a nucleotide sequence encoding a polypeptide comprising an amino acid sequence depicted in a row of Figure 1, amino acids 12 - 48 of a row of Figure 1, the top row of Figure 3C, Figure 9, amino acids 12 - 48 of a row of Figure 9, Figure 10, amino acids 12 - 88 of Figure 10, Figure 11 and Figure 17;
 - b) the complementary strand of the sequence of a);
 - c) RNA sequences transcribed from the sequences of a) or b), or a fragment or mutation thereof, which encodes a coiled-coil oligomer.
13. An isolated nucleic acid molecule encoding a fusion molecule of Claim 1.

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14. A fusion gene comprising a nucleic acid molecule of Claim 11 operably linked to a nucleic acid molecule encoding a heterologous peptide.
15. A fusion gene comprising a nucleic acid molecule of Claim 12 operably linked to a nucleic acid molecule encoding a heterologous peptide.
- 5 16. A recombinant polypeptide comprising an amino acid sequence encoded by a nucleic acid molecule of Claim 11.
- 10 *Sub B30* 17. An isolated and purified molecule comprising a polypeptide having an amino acid sequence selected from the group consisting of an amino acid sequence depicted in a row of Figure 1, amino acids 12 - 48 of a row of Figure 1, amino acids 12 - 60 of a row of Figure 1, the top row of Figure 3C, Figure 9, amino acids 12 - 48 of Figure 9, amino acids 12 - 60 of Figure 9, Figure 10, Figure 11 and Figure 17, or a fragment or derivative thereof which forms a coiled-coil oligomer.
- sub E* 15 18. A derivative of an HDAG peptide wherein a serine residue is substituted with cysteine.
19. An isolated and purified molecule comprising a polypeptide comprising an amino acid sequence of amino acids 12 - 88 of HDAG, or a fragment or derivative thereof which forms a coiled-coil oligomer and nuclear localization signal.
- 20 20. A polypeptide encoded by a fusion gene of Claim 14.
21. A polypeptide encoded by a fusion gene of Claim 15.

22. A vector comprising a nucleic acid molecule which encodes a subunit of an HDAG coiled-coil octamer.
23. A vector comprising a nucleic acid molecule of Claim 11.
24. A vector comprising a nucleic acid molecule of Claim 12.
- 5 25. A vector comprising a nucleic acid molecule of Claim 13.
26. A vector comprising a nucleic acid molecule encoding a fusion molecule of Claim 1.
27. A vector comprising a nucleic acid molecule encoding HDAG and at least one multiple cloning site.
- 10 28. The vector of Claim 27 wherein at least one multiple cloning site is located 3' to the nucleic acid molecule encoding HDAG.
29. The vector of Claim 27 wherein at least one multiple coding site is located 5' to the nucleic acid molecule encoding HDAG.
30. The vector of Claim 27 wherein there are at least two multiple coding sites,
15 wherein at least one multiple coding site is located in a flanking region 3' to the nucleic acid molecule encoding HDAG and at least one multiple coding site is located in a flanking region 5' to the nucleic acid molecule encoding HDAG.
31. A vector comprising a nucleic acid molecule of Claim 11 and at least one multiple cloning site.

32. A vector comprising a nucleic acid molecule of Claim 12 and at least one multiple cloning site.
33. The vector of Claim 32 further comprising a nucleic acid molecule encoding a nuclear localization signal.
- 5 34. The vector for expression of the fusion molecule of Claim 1 wherein a first heterologous gene encodes a first binding moiety and a second heterologous gene encodes a second binding moiety.
35. A vector of Claim 27 which further comprises a nucleic acid molecule which encodes a heterologous gene.
- 10 36. A host cell which comprises a nucleic acid molecule which encodes a fusion molecule of Claim 1.
37. A host cell which comprises a nucleic acid molecule of Claim 11.
38. A host cell which comprises a nucleic acid molecule of Claim 12.
39. A method of manufacturing a host cell comprising a nucleic acid molecule
15 encoding a fusion molecule comprising HDAg and at least one binding moiety comprising introducing a vector of Claim 26 into the host cell.
40. A method of expressing a high valency display of at least one binding moiety comprising introducing into a cell a vector comprising a nucleic acid molecule encoding HDAg and a nucleic acid molecule encoding the binding moiety and

culturing the cell under conditions sufficient to permit expression of a fusion molecule comprising the binding moiety and HDAg.

41. A method of enhancing interaction between binding partners comprising contacting a fusion molecule of Claim 1 with a second binding moiety wherein the first and second moieties are binding partners.

42. A method of Claim 41 wherein the fusion molecule presents the first and second binding moieties.

43. The method of Claim 41 wherein the interaction between ligands occurs in solution, on membranes or on surfaces.

44. A method of Claim 41 wherein the fusion molecule is a subunit of a coiled-coil oligomer and the first and second moieties are bound to the oligomer.

45. The method of Claim 41 whereby fusion of a first cell and a second cell is enhanced.

46. A method for delivering molecules to a cell comprising contacting them with a fusion molecule of Claim 1.

47. The method of Claim 46 wherein the binding moiety is an oligonucleotide.

48. The method of Claim 46 wherein the oligonucleotide hybridizes to a nucleic acid molecule in the cell.

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49. The method of Claim 47 wherein said fusion molecule further comprises a double-stranded nuclease.
50. The method of Claim 46 wherein the fusion molecule comprises a first binding moiety and a second binding moiety wherein the first binding moiety interacts with a binding partner and the second binding moiety functions as an effector.
51. The method of Claim 50 wherein the first binding moiety interacts with a cell surface receptor and the second binding moiety can kill the cell.
52. A method of amplifying a signal in a solid phase assay comprising coupling an HDag octamer with at least one copy of a domain which interacts with a ligand and at least two copies of a label.
53. A method of Claim 52 wherein the label is selected from the group consisting of alkaline phosphatase, a radiolabel, streptadavin and green fluorescent protein.
54. The method of Claim 52 wherein the solid phase assay is an ELISA assay.
55. A method of facilitating exchange of substrates and products comprising coupling an HDag oligomer to at least two enzymes which function in a linked pathway.
56. A method of enhancing a reaction between binding partners comprising coupling the binding partners to an HDag oligomer.

57. A method of enhancing a reaction between two binding partners comprising coupling one binding partner to an HDag oligomer and contacting the oligomer to a second binding partner.

Al C^3

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1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
2	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136	138	140	142	144	146	148	150	152	154	156	158	160	162	164	166	168	170	172	174	176	178	180	182	184	186	188	190	192	194	196	198	200
3	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60	63	66	69	72	75	78	81	84	87	90	93	96	99	102	105	108	111	114	117	120	123	126	129	132	135	138	141	144	147	150	153	156	159	162	165	168	171	174	177	180	183	186	189	192	195	198	201	204	207	210	213	216	219	222	225	228	231	234	237	240	243	246	249	252	255	258	261	264	267	270	273	276	279	282	285	288	291	294	297	300
4	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80	84	88	92	96	100	104	108	112	116	120	124	128	132	136	140	144	148	152	156	160	164	168	172	176	180	184	188	192	196	200	204	208	212	216	220	224	228	232	236	240	244	248	252	256	260	264	268	272	276	280	284	288	292	296	300	304	308	312	316	320	324	328	332	336	340	344	348	352	356	360	364	368	372	376	380	384	388	392	396	400
5	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230																																																						